

# TABLE OF CONTENTS

Nineteenth Annual Technical Conference Committee - - - - -	iii
1964-65 ASQC Officers - - - - -	iii
Foreward - - - - -	iv
Contents - - - - -	v
ICS Index -- Methodology or Techniques Classification - - - - -	xv
-- Functional Classification - - - - -	xvi
-- Industry and Business Classification - - - - -	xvii
Authors Index - - - - -	xix
 65-101 INSPECTION IN THE CHRYSLER 5/50 WARRANTY <u>John C. Zabriskie</u> , Quality Control Manager, Mound Road Engine, Chrysler Corporation, Detroit, Michigan 760:70:437	      3
 65-102 SOME NEW CHAIN SAMPLING INSPECTION PLANS <u>H. F. Dodge</u> , Professor, Statistics Center, Graduate School, Rutgers - The State University, New Brunswick, New Jersey <u>K. S. Stephens</u> , Research Leader, Engineering Research Center, Western Electric Co., Princeton, New Jersey 222:00:000	      8
 65-103 MILITARY INSPECTION OF PERISHABLE FOODS Albert A. Taylor, Lt. Colonel, USAF, VC, Chief, Inspection Division, Oakland Region, DSSC, Alameda, California 750:760:70:420	     18
 65-104 THE INSPECTOR'S ROLE IN TODAY'S QUALITY CONTROL <u>J. Y. McClure</u> , Director of Reliability, Quality Control, Value Control, General Dynamics Corporation, New York, New York <u>J. M. Bowers</u> , General Dynamics/Astronautics, San Diego, California 760:70:400	      21
 65-105 THE ECONOMY OF NUMERICAL CONTROL INSPECTION <u>William F. Hunt</u> , Supervisor, Tooling & Fabrication Inspection, Norair Division, Northrop Corporation, Hawthorne, California 740:760:70:437	      31
 65-106 TRACEABILITY AND CONFIGURATION DATA SYSTEM <u>A. Scott Crossfield</u> , Division Director, Test and Quality Assurance, Space and Information Systems Division, North American Aviation, Inc., Downey, California <u>Torben O. Thams</u> , Supervisor, Test and Quality Assurance, Space and Information Systems Division, North American Aviation, Inc., Downey, California 730:70:434	       36
 65-107 NEW DEVELOPMENTS IN INSPECTION FOR NASA SPACE PROGRAMS <u>Howard M. Weiss</u> , Chief, Quality Assurance Division, Office of Reliability & Quality Assurance, NASA Head- quarters, Washington, D. C. 320:340:760:70:400:991	      41

65-108	PROFESSIONALISM IN QUALITY CONTROL <u>J. W. Morris</u> , Chief of Quality Assurance, Atomics International, A Division of North American Aviation, Inc., Canoga Park, California <u>K. C. Asay</u> , Director of Quality Control, Atomics International, A Division of North American Aviation, Inc., Canoga Park, California 320:00:000	50
65-109	A CONCEPTUAL MODEL OF GENERAL APPLICATION TO THE INDUSTRIAL QUALITY CONTROL PROBLEM <u>L. Frank Morgan</u> , Manager, Quality and Reliability Systems, Lockheed Missiles and Space Company, Sunnyvale, California 300:20:60;70:400	59
65-110	MACHINING RELIABILITY CONTROL FOR UPGRADING QUALITY AND VALUE CONTROL <u>William R. Baker</u> , Director of Quality Control, Aerospace Group, Division, Parker-Hannifin Corporation, Los Angeles, California 123:612;762:70:434	77
65-111	THE 100 YEARS WAR FOR QUALITY, TOOLS, SYSTEMS <u>Paul E. Bruce</u> , Director, Product Assurance, Lockheed Propulsion Company, Redlands, California 300:00:991	90
65-112	A MATTER OF MANAGEMENT - QUALITY COSTS FOR MISSILES AND SPACE PRODUCTS <u>Richard J. Pierce</u> , Manager, Quality Control and Test Section, Re-entry Systems Department, General Electric Company, Philadelphia, Pennsylvania <u>Robert E. Beames</u> , Manager, Quality Costs, Re-entry Systems Department, General Electric Company, Philadelphia, Pennsylvania 353:00:419	99
65-113	QUALITY SYSTEMS ANALYSIS - KEY TO RECURRING COST REDUCTION <u>Dana M. Cound</u> , Chief, Quality Assurance, Quality Assurance and Logistics Division, Autonetics, Anaheim, California 342:90:000	109
65-114	A REPORT FROM THE ETI - PROFESSIONALISM IN QUALITY CONTROL <u>L. N. Bress</u> , Consultant, Manufacturing Operations and Quality Control Education Service, General Electric Company, New York, New York 320:00:000	116
65-115	PROFESSIONALISM <u>Steve Kozich</u> , Manager, Quality Assurance, Atlantic Research Corporation, Los Angeles, California 000:00:000	120
65-116	VENDOR - VENDEE RELATIONSHIPS <u>W. H. Anderson</u> , Manager, Vendor Quality Control, Re-Entry Systems Department, General Electric Company, Philadelphia, Pennsylvania 351:40:000	136

65-118	PRODUCT ASSURANCE OF METALS FOR MISSILES AND SPACE <u>Harold W. Williams, Jr.</u> , Reliability Engineer, Propulsion and Chemical Systems Division, Atlantic Research Corp., Alexandria, Virginia 220:713:824:70:400	160
65-119	A TRADE-OFF HISTORY FOR A HIGH RELIABILITY PROGRAM <u>W. R. Burkhalter</u> , Reliability Engineer, Reliability and Quality Assurance, Electro-Mechanical Research, Inc., Sarasota, Florida 817:00:900	168
65-120	STANDARDIZATION AND THE QUALITY AND RELIABILITY OF SOVIET PRODUCTION <u>Joseph A. Gwver</u> , Senior Research Specialist (I.E.), Library of Congress, Washington, D. C. 352:760:20:60:400	180
65-121	RESEARCH IN THE FUNCTIONAL ANALYSIS OF SYSTEMS <u>C. L. Britt, Jr.</u> , Member of Technical Staff, Radiation Systems Laboratory, Research Triangle Institute, Durham, North Carolina 831:60:400	198
65-122	EFFECTIVE PRODUCTION SAMPLING <u>F. B. Waechter</u> , Manager, Component Quality Control Engineering - Space Systems, Re-Entry Systems Department, General Electric, Philadelphia, Pennsylvania 200:345:710:70:400	220
65-123	COMMERCIAL DESIGN REVIEW AND DATA ANALYSIS PROGRAM <u>Richard M. Jacobs</u> , Staff Assistant, Headquarters Engineering, Westinghouse Electric Corporation, Pittsburgh, Pennsylvania <u>H. Donnell Hulme</u> , Staff Assistant, Headquarters, Manufacturing, Westinghouse Electric Corporation, Pittsburgh, Pennsylvania 813:836:840:60:70:436	229
65-124	DATA ANALYSIS IN PHYSICS OF FAILURE STUDIES <u>James R. King</u> , Specialist, Data Systems Division, Autonetics Division of North American Aviation, Inc., Anaheim, California 844:60:436	242
65-125	RELIABILITY IN SOLDERING - NOT A MYTH <u>H. H. Marko</u> , Director, Solder Research and Development, Alpha Metals, Inc., Jersey City, New Jersey 120:20:436	249
65-126	B AND H ACCEPTANCE SAMPLING PLANS <u>Alfred C. Jacobsen</u> , Staff Engineer, Mfg. Research, IBM, Poughkeepsie, New York <u>Stephen A. Davis</u> , Senior Associate Statistician, Data Systems, IBM, Poughkeepsie, New York <u>Richard T. Marino</u> , Marketing Representative, Federal Region, IBM, Washington, D. C. 220:222:70:400	257
65-127	FAILURE DETECTION IN PARTS <u>L. G. Reynolds</u> , Design Engineer, Reliability, Test and Evaluation, Martin Company, Orlando, Florida 710:770:844:70:436	270
65-128	QUALITY ASSURANCE PROGRAM AND LIFETIME WARRANTY <u>Lawrence F. Jones</u> , Manager, Quality and Reliability Department, Semiconductor Division, Westinghouse Electric Corporation, Youngwood, Pennsylvania 350:70:436	277

65-129	TROUBLESHOOTING - A QUALITY CONTROL TASK <u>Frank J. Rodgers</u> , Manager, Component Quality Control and Test, Re-Entry Systems Department, General Electric Company, Philadelphia 1, Pennsylvania 760:20:70:400	282
65-130	A PROGRAM OF PRODUCT QUALITY ASSURANCE <u>E. A. Lally</u> , Staff Quality Assurance Engineer, Electronic Products Division, Hughes Aircraft Company, Newport Beach, California 120:520:20:70:400	286
65-131	CRITICAL, MAJOR, OR WHAT? <u>John Schneider</u> , Manager of Quality Control, Andrew Corporation, Chicago, Illinois 300:20:436	291
65-132	RELIABILITY MANAGEMENT OF SPACE SUBSYSTEMS <u>Melbourne D. Johnson</u> , Head of Reliability, Santa Barbara Research Center, Goleta, California 810:60:400	292
65-133	WARRANTY ANALYSIS: INDUSTRIAL AND COMMERCIAL PRODUCT RELIABILITY <u>Paul Gottfried</u> , Principal Scientist, Booz, Allen Applied Research Inc., Bethesda, Maryland <u>Ralph I. Madison</u> , Project Scientist, Booz, Allen Applied Research Inc., Bethesda, Maryland 800:00:400	300
65-134	MAKE YOUR QUALITY AUDIT EFFECTIVE <u>Paul S. Reis</u> , Senior Engineer, POLARIS Reliability and Quality Control Division, Aerojet-General Corporation, Sacramento, California <u>S. I. Fahrenbruch</u> , Quality Engineer, POLARIS Reliability and Quality Control Division, Aerojet-General Corporation, Sacramento, California 340:70:419	306
65-135	EXPLOITING THE RELIABILITY-MAINTENANCE RELATIONSHIP FOR MANNED MISSIONS OF EXTENDED DURATION <u>John W. Griswold</u> , Engineering Reliability and Safety Manager, Aero-Space Division, The Boeing Company, Seattle, Washington <u>R. C. Schneider</u> , Supervisor, Engineering Reliability and Safety Organization, The Boeing Company, Seattle, Washington 817:825:873:60:437	319
65-136	QUALITY CONTROL AND DIGITAL CONTROL COMPUTERS <u>W. E. Arnold</u> , Manager, Reliability Control, Computer Systems Division, Westinghouse Electric Corporation, Pittsburgh 35, Pennsylvania 100:340:700:810:70:400	329
65-137	THE ROLE OF SYSTEM SAFETY ENGINEERING AND ITS RELATION TO RELIABILITY <u>George F. Ruff</u> , Specialist Research, Space and Information Systems Division, North American Aviation, Inc., Downey, California 600:810:830:60:90:400	341
65-138	INTERNATIONAL RELIABILITY - A STATUS REPORT <u>Abe M. Okun</u> , Director of Quality Assurance, Weston Instruments, Inc., Newark, New Jersey 800:00:000	348

65-139	EXPONENTIAL SMOOTHING FOR PREDICTION OF RELIABILITY GROWTH <u>Thomas L. Fegan</u> , Reliability Staff, Spacecraft Department, General Electric Company, Philadelphia, Pennsylvania <u>Myron A. Wilson</u> , Reliability Staff, Re-entry Systems Department, General Electric Company, Philadelphia, Pennsylvania 840:850:60:000	353
65-140	SOME PROPERTIES OF THE CONDITIONAL WEIBULL DISTRIBUTION <u>Leo A. Aroian</u> , Reliability Staff, Electronics Division, TRW Space Technology Laboratories, Redondo Beach, California 420:544:822:00:000	361
65-141	RELATIONSHIPS BETWEEN THE COMMON STATISTICAL DISTRIBUTIONS <u>Lloyd S. Nelson</u> , Consulting Statistician, Lamp Division, General Electric Company, Cleveland, Ohio 420:00:000	371
65-142	A UNIFIED VIEW OF ANOVA <u>E. T. Canty</u> , Staff Engineer, Statistical Analysis, IBM, Poughkeepsie, New York <u>Roy J. Weppman</u> , Senior Associate Engineer, Mfg. Research, IBM, Poughkeepsie, New York 520:00:000	378
65-143	ANALYSIS OF MEANS - A TOOL OF PROCESS CONTROL <u>Louis Schneider</u> , Quality Control Engineer, Autonetics, A Division of North American Aviation, Inc., Anaheim, California 520:70:439	387
65-144	SIMULATION - AN IDEAL STATISTICAL QUALITY CONTROL TRAINING AND ENGINEERING TOOL <u>Richard S. Bingham, Jr.</u> , Quality Control Manager, Consolidated Papers, Inc., Wisconsin Rapids, Wisconsin 320:612:730:740:70:000:400	397
65-145	PEARSON UNIVERSAL RANDOM DISTRIBUTION GENERATOR (PURGE) <u>John D. Cooper</u> , Statistician, Scientific Computation, IBM, Poughkeepsie, New York <u>Stephen A. Davis</u> , Statistician, Scientific Computation, IBM, Poughkeepsie, New York <u>Nicholas R. Dono</u> , Statistician, Scientific Computation, IBM, Poughkeepsie, New York 425:730:00:000	402
65-146	EXCEEDANCE THEORY APPLIED TO RELIABILITY AND QUALITY CONTROL PROBLEMS <u>L. Danziger</u> , Manager, Statistical Analysis, Components Division, IBM Corporation, Poughkeepsie, New York <u>S. A. Davis</u> , Senior Assoc. Statistician, Data Systems Division, IBM Corporation, Poughkeepsie, New York 122:221:823:837:00:000	412
65-147	THE INTERNATIONAL SYSTEM OF UNITS <u>Alvin G. McNish</u> , Chief, Metrology Division, National Bureau of Standards, Washington, D. C. 700:00:000	431
65-148	THE MEASUREMENT GAP-SEVERAL YEARS LATER <u>Martin A. Mason</u> , Center for Measurement Science, The George Washington University, Washington, D. C. 710:00:000	439

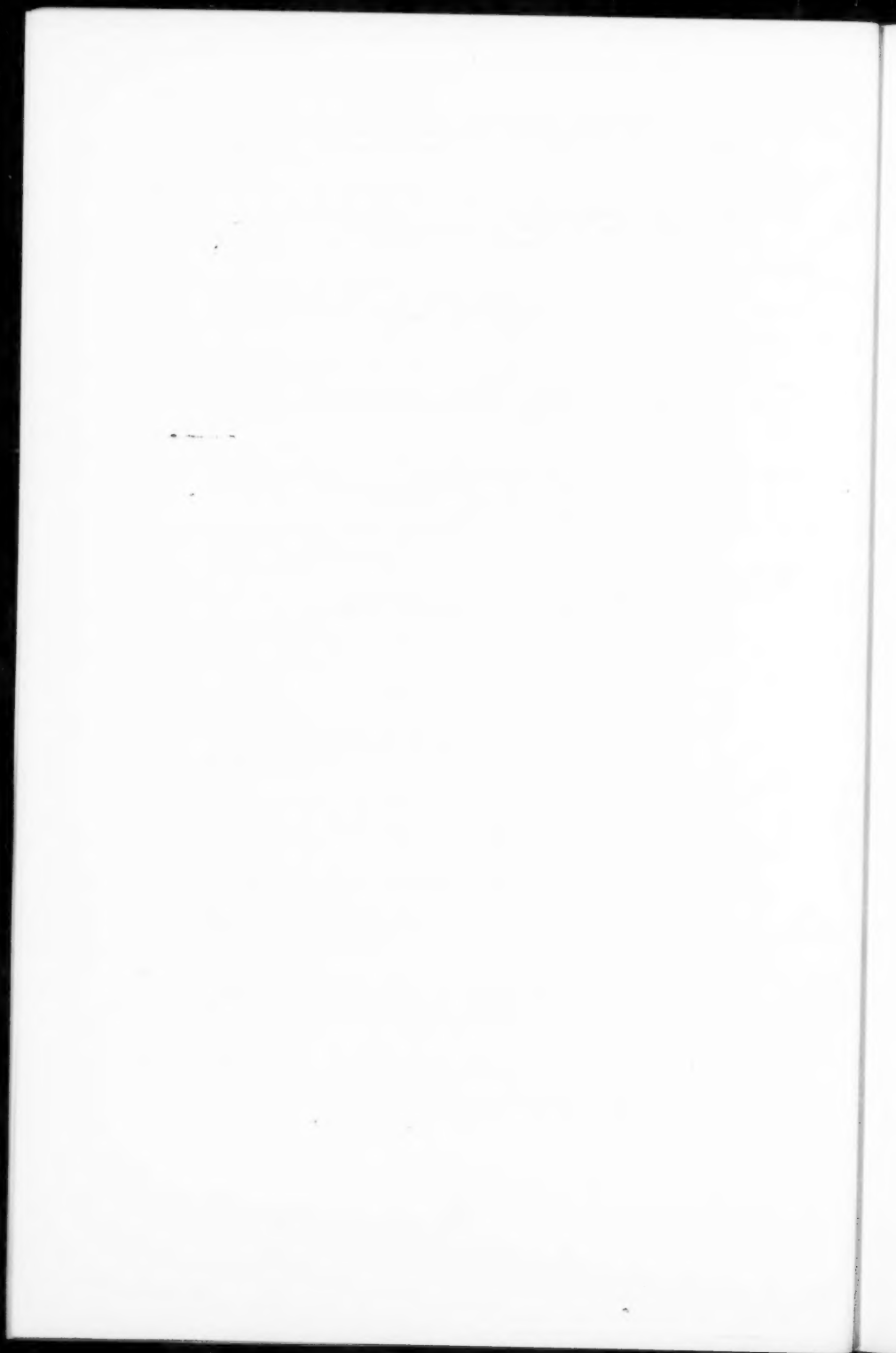
65-149	FLEET CALIBRATION SUPPORT IN THE NAVY <u>J. L. Hayes</u> , Metrology Technical Director, Metrology Engineering Center, Bureau of Naval Weapons Representative, Pomona, California 767:00:991	443
65-150	CALIBRATION - THE QUALITY CONTROL REPRESENTATIVE SOUNDS OFF <u>William G. Barnes</u> , Space Systems Quality Control Specialist, Quality Assurance Division, NASA-O, Downey, California 767:70:419	449
65-151	THE MESS IN MEASUREMENT <u>Ted Busch</u> , Vice President, Dundick Corporation, Chicago, Illinois 320:700:10:60:000	456
65-152	THE ASSURED PERFORMANCE CALIBRATION (APC) PROGRAM <u>T. D. Rollins</u> , Quality Control Engineer, Navigation Systems Division, Autonetics, A Division of North American Aviation, Inc., Anaheim, California <u>T. D. Martin</u> , General Supervisor, Navigation Systems Division, Autonetics, A Division of North American Aviation, Inc., Anaheim, California 120:612:720:60:70:000:436	463
65-153	THE ROLE OF METROLOGY IN CUSTOMER ACCEPTANCE TESTING PROGRAMS <u>Thurlow M. Morrow</u> , Assistant Section Chief, Metrology Operations Section, Douglas Aircraft Company, Inc., Santa Monica, California 351:710:00:000	474
65-154	MAJOR NEW DEVELOPMENTS IN SYSTEMS ENGINEERING <u>Donald S. Feigenbaum</u> , General Manager, International Systems Company, Pittsfield, Massachusetts 300:10:60:70:400	479
65-155	ESCAPE PROBABILITY AS A SYSTEMS DESIGN PARAMETER <u>John L. Kidwell</u> , Director of Quality, Lycoming Division, Avco Corporation, Stratford, Connecticut <u>Nicholas L. Squeglia</u> , Supervisor, Manufacturing Quality Analysis, Lycoming Division, Avco Corporation, Stratford, Connecticut <u>H. J. Lavender</u> , Chief, Human Factors Engineering, Lycoming Division, Avco Corporation, Stratford, Connecticut 612:60:70:400	486
65-156	GAINING BUSINESS-WIDE SUPPORT FOR THE QUALITY SYSTEM <u>Wyatt H. Lewis</u> , Quality Control Engineer, Manufacturing Services, General Electric Company, New York, New York 000:00:000	500
65-157	METRI <u>William J. Huber</u> , Vice President and Technical Director, METRI Project, Clark, Cooper, Field and Wohl, Inc., A Division of Dunlap and Assoc., Pan Am Bldg., New York, New York 340:635:880:90:991	503
65-158	RESOURCE REQUIREMENTS AS A CONSEQUENCE OF R AND M TRADEOFFS <u>Russell E. Purvis</u> , Leader, Operations Research Engineering and Technical Services, RCA Service Company, Cherry Hill, New Jersey 610:00:000	511

65-159	ENGINEERING THE TOTAL MAN-MACHINE-INFORMATION SYSTEM <u>Donald S. Feigenbaum</u> , General Manager, International Systems Company, Pittsfield, Massachusetts 613:70:400	520
65-160	SYSTEMS ENGINEERING AND THE CONTROL OF QUALITY <u>Robert E. Jones</u> , Manager of Manufacturing Review, Quality Assurance Dept., UNIVAC Division, Sperry Rand Corporation, New York, New York 613:70:400	524
65-161	EXPERIMENTATION WITHOUT DATA <u>J. D. Hinchey</u> , Research Statistician, Monsanto Company, St. Louis, Missouri 500:00:400	533
65-162	UNDERSTANDING MULTIPLE REGRESSION <u>John L. Jaech</u> , Consulting Statistician, Vallecitos Atomic Laboratory, General Electric, Pleasanton, California 520:00:000	539
65-163	CON-MAN: A 3-D DEVICE FOR THE REPRESENTATION OF RESPONSE SURFACES <u>Elmer E. Lind</u> , Production Superintendent, Enzyme and Animal Feed Production, Lederle Laboratories, A Division of American Cyanamid Co., Pearl River, New York <u>Walter R. Young</u> , Group Leader, Process Analysis, Lederle Laboratories, A Division of American Cyanamid Co., Pearl River, New York 520:00:000	545
65-164	BACKGROUND PROBLEMS IN THE ANALYSIS OF COUNT DATA <u>Wesley L. Nicholson</u> , Senior Research Associate, Pacific Northwest Laboratories, The Battelle Memorial Institute, Richland, Washington 400:715:00:000	552
65-165	INDIVIDUAL COMPARISONS IN ANOVA <u>Thomas W. Calvin</u> , Senior Engineer, Mathematics Branch, The Carborundum Company, Niagara Falls, New York 520:730:00:000	559
65-166	MULTIPLE REGRESSION ANALYSIS - A METHOD OF PROCESS CONTROL, EVALUATION AND COMPARISON <u>Donald N. Glass</u> , Senior Reliability Engineer, Materials and Process Development Division, Atomics International, Canoga Park, California 120:720:20:434	570
65-167	ASSURANCE OF HIGH QUALITY URANIUM-CARBIDE FUEL FOR NUCLEAR REACTORS <u>Lewis O. Hicks</u> , Research Engineer, Reliability, Rocketdyne, North American Aviation, Inc., Canoga Park, California 720:40:433	577
65-168	GRAPHIC DETERMINATION OF ACCEPTANCE LIMIT ON MEAN WITH VARYING SAMPLE SIZE <u>William W. Bradley</u> , Associate Control Statistician, Miles Products Division, Miles Laboratories, Inc., Elkhart, Indiana 223:70:400	580
65-169	OBJECTIVES OF AND AID AVAILABLE FROM THE NONDESTRUCTIVE TESTING (NDT) TECHNICAL COMMITTEE <u>Frank Caplan</u> , Director, Quality and Reliability Engineering, Atlas Chemical Industries, Inc., Aerospace Components Division, Valley Forge, Pennsylvania 775:90:000	585

65-170	SPECIFICATION - BOON OR BANE <u>W. W. Mills, Jr.</u> , Chief, Quality Assurance and Reliability Section, Thiokol Chemical Corporation, Huntsville Division, Huntsville, Alabama 121:775:70:400	586
65-171	THE CONTROL AND OPTIMIZATION OF QUALITY COSTS <u>W. Grant Ireson</u> , Professor and Executive Head, Department of Industrial Engineering, Stanford University, Stanford, California 350:70:400	599
65-172	THOUGHTS ON THE ECONOMICS OF QUALITY <u>David L. Field</u> , Staff Member, Quality Assurance Department, Sandia Corporation, Albuquerque, New Mexico 350:10:000	606
65-173	PREDOMINANT QUALITY COST PROBLEMS AS THEY EXIST IN AMERICAN INDUSTRY <u>Michael J. O'Callaghan</u> , Division Quality Control Engineer, Magnetic Products Division, 3M Company, Hutchinson, Minnesota 353:30:000	614
65-174	QUALITY CONTROL AND THE COMPUTER <u>Irvin R. Whiteman</u> , Director of Operations Research, Computer Applications, Inc., Los Angeles, California 730:70:400	619
65-175	BELL SYSTEM PERFORMANCE MEASUREMENTS <u>William C. Hartman</u> , Statistician, New Jersey Bell Telephone Company, Newark, New Jersey 623:635:10:548	626
65-176	PROFIT ORIENTED QUALITY ENGINEERING <u>Frank E. Cotton, Jr.</u> , Professor and Head, Department of Industrial Engineering, Mississippi State University, State College, Mississippi 300:600:10:70:400	629
65-177	BETTER QUALITY, LOWER COSTS, THROUGH DESIGNER-FABRICATOR COMMUNICATION <u>Leon V. Mason</u> , Quality Planning Engineer, Quality Assurance Engineering, International Business Machines, Inc., Rochester, Minnesota 342:351:70:436	639
65-178	DO YOU HAVE TIME -- IN YOUR QUALITY PROGRAM <u>Robert F. Cell</u> , Quality Control Manager, Quality Division, The Bendix Corporation, Kansas City, Missouri 611:10:400	650
65-179	OPERATOR AND INSPECTOR CERTIFICATION PROGRAMS AT HONEYWELL ORDNANCE <u>John R. Clifford</u> , General Quality Assurance Foreman, S.W.F., Ordnance, Honeywell, Inc., Minneapolis, Minnesota 320:80:419	656
65-180	VIP MEANS QUALITY <u>Hubert M. Childress</u> , Assistant to the Vice President-General Manager, Missile and Space Systems Division, Douglas Aircraft Company, Santa Monica, California 340:70:400	663
65-181	RECENT TRENDS IN AIR FORCE LOGISTICS COMMAND CONTRACTS AND THEIR IMPACT ON QUALITY CONTROL <u>O. A. Cocca</u> , Sup'v. Gen. Engr., Quality Assurance Branch, Directorate of Operations, Hq., Air Force Logistics Command, Wright-Patterson Air Force Base, Ohio 351:70:991	677



65-192	VENDOR SELECTION USING EXPECTED VALUE <u>Thomas J. Cartin</u> , Manager, Product Reliability, Underseas Division, Westinghouse Electric Corporation, Baltimore, Maryland 340:351:40:400	684
65-183	CERTIFICATION - TOWER OF BABEL? <u>W. A. Sherman</u> , Division Supervisor, Advanced Program Planning Division, Sandia Corporation, Albuquerque, New Mexico 351:70:400	689
65-184	VENDORS SURVEYS, YOUR EARLY WARNING SYSTEM <u>C. L. Carter, Jr.</u> , Engineering and Management Consultant, C. L. Carter, Jr. and Associates, Dallas, Texas 351:70:400	697
65-185	A UNIFIED APPROACH TO VENDOR SURVEYS <u>Jack B. Foster</u> , Administrator, Supplier Quality Control Surveys, Atomics International, North American Aviation, Inc., Los Angeles, California 351:70:000	701
65-186	VALUE ENGINEERING AND SYSTEMS EFFECTIVENESS <u>Anthony R. Tocco</u> , Manager, Value Engineering Department, Product Assurance Division, TRW Space Technology Laboratories, Redondo Beach, California 350:613:90:419	707
65-187	THE DEPARTMENT OF DEFENSE VALUE ENGINEERING PROGRAM AND ITS IMPACT ON QUALITY <u>B. E. Bledenbender</u> , Director, DoD Value Engineering Services Office, Cameron Station, Alexandria, Virginia 814:00:991	714



# LCS INDEX

## METHODOLOGY OR TECHNIQUES CLASSIFICATION

- |  |  |
|--|--|
| 000: General<br>65-115, 65-156   | 351: Customer-Vendor Relations<br>65-116, 65-153, 65-177, 65-181<br>65-182, 65-183, 65-184, 65-185 |
| 100: Statistical Process Control<br>65-136   | 352: Quality Standards<br>65-120   |
| 120: Process Control Requirements<br>65-125, 65-130, 65-152, 65-166                                      | 353: Quality Cost Measurement<br>65-112, 65-173  |
| 121: Specifications<br>65-170  | 400: Mathematical Statistics and<br>Probability Theory<br>65-164                                   |
| 122: Tolerances<br>65-146  | 420: Properties of Distribution Functions<br>65-140, 65-141  |
| 123: Process Capability<br>65-110  | 425: Fitting Distribution Functions<br>65-145  |
| 200: Sampling Principles and Plans<br>65-122   | 500: Experimentation and Correlation<br>65-161   |
| 220: Sampling Plans<br>65-118, 65-126  | 520: Design and Analysis of Experiments<br>65-130, 65-142, 65-143, 65-162<br>65-163, 65-165        |
| 221: Selection/Comparison of Sampling<br>Plans<br>65-146   | 544: Orthogonal Polynomials<br>65-14C  |
| 222: Attributes Plans<br>65-102, 65-126  | 600: Managerial Applications<br>65-137, 65-176   |
| 223: Variables Plans<br>65-168   | 610: Operations Research Methods<br>65-158   |
| 300: Management of Quality Control<br>65-109, 65-111, 65-131<br>65-154, 65-176                           | 611: Collection of Operational Data<br>65-178  |
| 320: Training in Quality Control<br>65-107, 65-108, 65-114, 65-144<br>65-151, 65-179                     | 612: Special Techniques and Their<br>Application<br>65-110, 65-144, 65-152, 65-155                 |
| 340: Administrative Techniques in<br>Quality Control<br>65-107, 65-134, 65-136, 65-157<br>65-180, 65-182 | 613: Managerial Systems Analysis<br>65-159, 65-160, 65-184, 65-186                                 |
| 342: Standards and Procedures<br>65-113, 65-177  | 623: Work Measurement and Wage Plans<br>65-175   |
| 345: Quality Auditing Systems<br>65-122  | 635: Index Numbers<br>65-157, 65-175   |
| 350: Economics of Quality<br>65-128, 65-171, 65-172, 65-183<br>65-186                                    | 700: Measurement and Control<br>65-136, 65-147, 65-151   |

- |   |   |
|---|---|
| 710: Measurement of Quality Characteristics<br>65-122, 65-127, 65-148, 65-153 | 814: Value Analysis<br>65-187                             |
| 713: Structural Properties<br>65-118  | 817: Trade-Off Evaluations<br>65-119, 65-135              |
| 715: Atomic and Nuclear Properties<br>65-164                                  | 822: Reliability Distribution Functions<br>65-140         |
| 720: Process Control<br>65-152, 65-166, 65-167                                | 823: Life Testing Theory<br>65-146                        |
| 730: Data Handling<br>65-106, 65-144, 65-145, 65-165<br>65-174                | 824: Estimating and Assessment<br>65-118                  |
| 740: Automation<br>65-105, 65-144   | 825: Apportionment<br>65-135                              |
| 750: Sensory Measurements<br>65-103   | 830: Design<br>65-137                                     |
| 760: Inspection<br>65-101, 65-103, 65-104, 65-105<br>65-107, 65-120, 65-129   | 831: System Reliability Analysis/<br>Evaluation<br>65-121 |
| 762: In-Process Inspection<br>65-110  | 836: Design Reviews<br>65-123                             |
| 767: Calibration & Standards<br>65-149, 65-150                                | 837: Tolerance Analysis/Safety Margins<br>65-146          |
| 770: Test Engineering<br>65-127   | 840: Methods of Reliability Analysis<br>65-123, 65-139    |
| 775: Test Methods (Non-Destructive)<br>65-169, 65-170                         | 844: Failure Modes/Mechanisms/Analysis<br>65-124, 65-127  |
| 800: Reliability<br>65-133, 65-138  | 850: Demonstration/Measurement<br>65-139                  |
| 810: Management of Reliability Function<br>65-132, 65-136, 65-137             | 873: Design<br>65-135                                     |
| 813: Program Implementation/Evaluation<br>65-123                              | 880: Availability<br>65-157                               |

#### FUNCTIONAL CLASSIFICATION

- |  |  |
|--|--|
| 100: General<br>65-102, 65-108, 65-111, 65-112<br>65-114, 65-115, 65-119, 65-133<br>65-138, 65-140, 65-141, 65-142<br>65-145, 65-146, 65-147, 65-148<br>65-149, 65-153, 65-156, 65-158<br>65-161, 65-162, 65-163, 65-164<br>65-165, 65-187 | 130: Financial<br>65-173   |
| 110: Management<br>65-151, 65-154, 65-172, 65-175<br>65-176, 65-178  | 140: Procurement<br>65-116, 65-167, 65-182   |
| 120: Production<br>65-109, 65-120, 65-125, 65-129<br>65-130, 65-131, 65-166  | 160: Engineering<br>65-109, 65-120, 65-121, 65-123<br>65-124, 65-132, 65-135, 65-137<br>65-139, 65-151, 65-152, 65-154<br>65-155 |
|  | 170: Quality<br>65-101, 65-103, 65-104, 65-105<br>65-106, 65-107, 65-109, 65-110<br>65-118, 65-122, 65-123, 65-126               |

:70: Quality (Continued)  
 65-127, 65-128, 65-129, 65-130  
 65-134, 65-136, 65-143, 65-144  
 65-150, 65-152, 65-154, 65-155  
 65-159, 65-160, 65-168, 65-170  
 65-171, 65-174, 65-176, 65-177  
 65-180, 65-181, 65-183, 65-184  
 65-185

:80: Industrial Relations  
 65-179

:90: Management Services  
 65-113, 65-137, 65-157  
 65-169, 65-186

# INDUSTRY AND BUSINESS CLASSIFICATION

:000 General or Non-Classifiable  
 Establishments  
 65-102, 65-108, 65-113, 65-114  
 65-115, 65-116, 65-138  
 65-139, 65-140, 65-141, 65-142  
 65-144, 65-145, 65-146, 65-147  
 65-148, 65-151, 65-152, 65-153  
 65-156, 65-158, 65-162, 65-163  
 65-164, 65-165, 65-169, 65-172  
 65-173, 65-185

:400 Manufacturing  
 65-104, 65-107, 65-109, 65-118  
 65-120, 65-121, 65-122, 65-126  
 65-129, 65-130, 65-132, 65-133  
 65-136, 65-137, 65-144, 65-154  
 65-155, 65-159, 65-160, 65-161  
 65-168, 65-170, 65-171, 65-174  
 65-176, 65-178, 65-180, 65-182  
 65-183, 65-184

:419 Ordnance and accessories  
 65-112, 65-134, 65-150, 65-179  
 65-186

:420 Food and kindred products  
 65-103

:433 Primary metal industries  
 65-167

:434 Fabricated metal products, except  
 ordnance, machinery and transporta-  
 tion equipment  
 65-106, 65-110, 65-166

:436 Electrical machinery, equipment, and  
 supplies  
 65-123, 65-124, 65-125, 65-127  
 65-128, 65-131, 65-152, 65-177

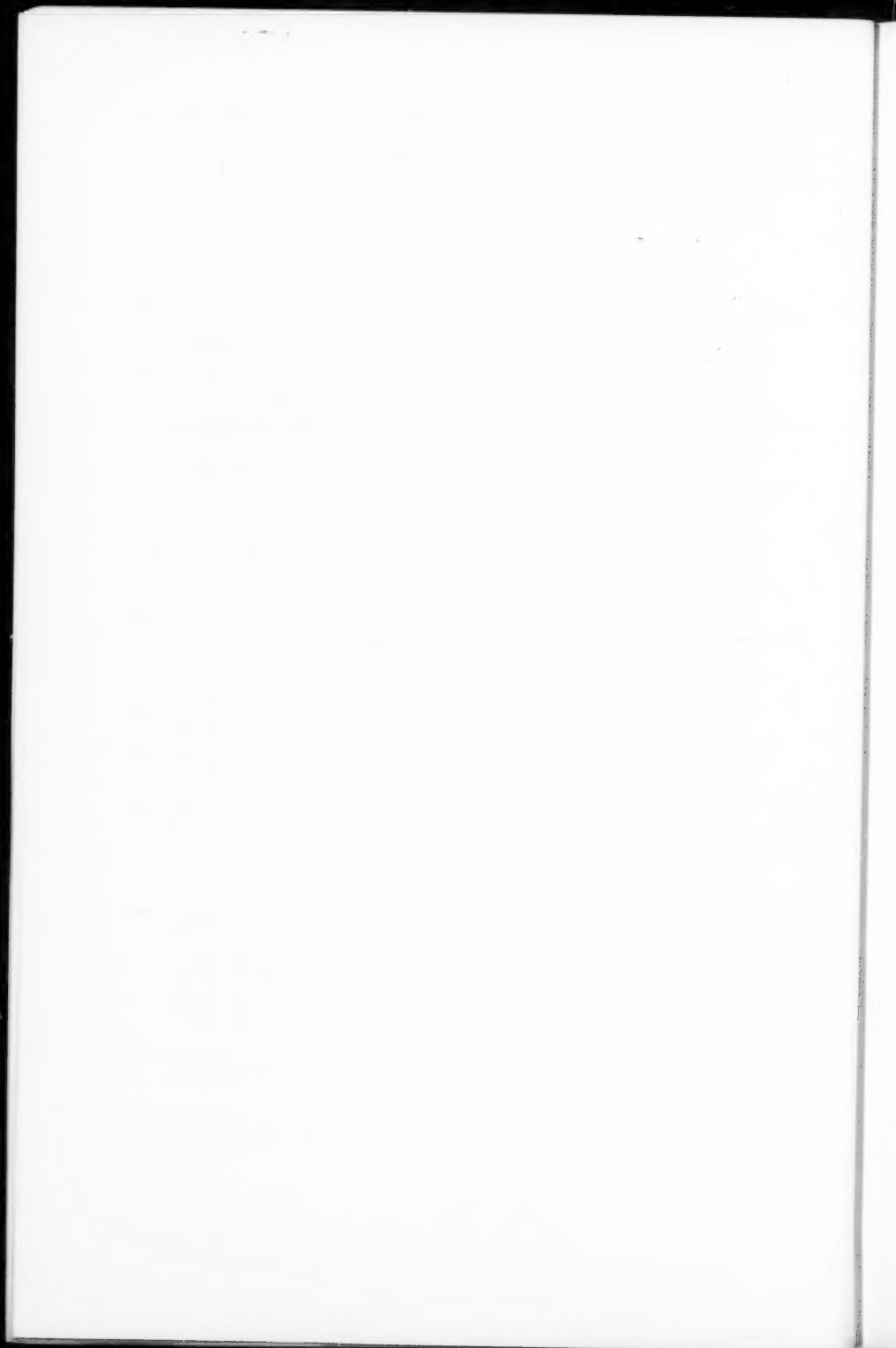
:437 Transportation equipment  
 65-101, 65-105, 65-135

:439 Miscellaneous manufacturing industries  
 65-143

:548 Communication  
 65-175

:900 Government  
 65-119

:991 Federal government  
 65-107, 65-111, 65-149, 65-157  
 65-181, 65-187



# AUTHORS INDEX

ANDERSON, W. H., Vendor - Vendee Relationships	136
ARNOLD, W. E., Quality Control and Digital Control Computers	329
AROTIAN, Leo A., Some Properties of the Conditional Weibull Distribution	361
ASAY, K. C., and Morris, J. W., Professionalism in Quality Control	50
BAKER, William R., Machining Reliability Control for Upgrading Quality and Value Control	77
BARNES, William G., Calibration - The Quality Control Representative Sounds Off	449
BEAMES, Robert E., and Pierce, Richard J., A Matter of Management - Quality Costs for Missiles and Space Products	99
BIEDENBENDER, R.E., The Department of Defense Value Engineering Program and its Impact on Quality	714
BINGHAM, Richard S., Jr., Simulation - An Ideal Statistical Quality Control Training and Engineering Tool	397
BOWERS, J. M., and McClure, J. Y., The Inspector's Role in Today's Quality Control	21
BRADLEY, William W., Graphic Determination of Acceptance Limit on Mean with Varying Sample Size	580
BRESS, L. N., A Report from the ETI - Professionalism in Quality Control	116
BRITT, C. L., Jr., Research in the Functional Analysis of Systems	198
BRUCE, Paul E., The 100 Years War for Quality, Tools, Systems	90
BURKHALTER, W. R., A Trade-off History for a High Reliability Program	168
BUSCH, Ted, The Mess in Measurement	456
CALVIN, Thomas W., Individual Comparisons in ANOVA	559
CANTY, E. T., and Wepman, Roy J., A Unified View of ANOVA	378
CAPLAN, Frank, Objectives of and Aid Available From the Nondestructive Testing (NDT) Technical Committee	585
CARTER, C. L., Jr., Vendors Surveys, Your Early Warning System	697
CARTIN, Thomas J., Vendor Selection Using Expected Value	684
CELL, Robert F., Do You Have Time -- In Your Quality Program	650
CHILDRESS, Hubert M., VIP Means Quality	663
CLIFFORD, John R., Operator and Inspector Certification Programs at Honeywell Ordnance	565
COCCA, O. A., Recent Trends in Air Force Logistics Command Contracts and Their Impact on Quality Control	677

COOPER, John D., and Davis, Stephen A., and Dono, Nicholas R., Pearson Universal Random Distribution Generator (PURGE)	402
COTTON, Frank E., Jr., Profit Oriented Quality Engineering	629
COUND, Dana M., Quality Systems Analysis - Key to Recurring Cost Reduction	109
CROSSFIELD, A. Scott, and Thams, Torben O., Traceability and Configuration Data System	36
DANZIGER, L. and Davis, S. A., Exceedance Theory Applied to Reliability and Quality Control Problems	412
DAVIS, Stephen A., and Jacobsen, Alfred C., and Marino, Richard T., B and H Acceptance Sampling Plans	257
DAVIS, Stephen A., and Cooper, John D., and Dono, Nicholas R., Pearson Universal Random Distribution Generator (PURGE)	402
DAVIS, S. A., and Danziger, L., Exceedance Theory Applied to Reliability and Quality Control Problems	412
DODGE, H. F., and Stephens, K. S., Some New Chain Sampling Inspection Plans	8
DONO, Nicholas R., and Cooper, John D., and Davis, Stephen A., Pearson Universal Random Distribution Generator (PURGE)	402
FAGAN, Thomas L., and Wilson, Myron A., Exponential Smoothing for Prediction of Reliability Growth	353
FAHRENBRUCH, S. I., and Reis, Paul S., Make Your Quality Audit Effective	306
FEIGENBAUM, Donald S., Major New Developments in Systems Engineering	479
FEIGENBAUM, Donald S., Engineering The Total Man-Machine-Information System	520
FIELD, David L., Thoughts on the Economics of Quality	606
FOSTER, Jack B., A Unified Approach to Vendor Surveys	701
GLASS, Donald N., Multiple Regression Analysis - A Method of Process Control Evaluation and Comparison	570
GOTTFRIED, Paul., and Madison, Ralph I., Warranty Analysis: Industrial and Commercial Product Reliability	300
GRISWOLD, John W., and Schneider, R. C., Exploiting the Reliability-Maintenance Relationship for Manned Missions of Extended Duration	319
GWYER, Joseph A., Standardization and the Quality and Reliability of Soviet Production	180
HARTMAN, William C., Bell System Performance Measurements	626
HAYES, J. L., Fleet Calibration Support in the Navy	443
HICKS, Lewis O., Assurance of High Quality Uranium-Carbide Fuel for Nuclear Reactors	577
HINCHEN, J. D., Experimentation Without Data	533
HUBER, William J., METRI	503
HULME, H. Donnell and Jacobs, Richard M., Commercial Design Review and Data Analysis Program	229
HUNT, William F., The Economy of Numerical Control Inspection	31



IRESON, W. Grant, The Control and Optimization of Quality Costs	599
JACOBS, Richard M., and Hulme, H. Donnell, Commercial Design Review and Data Analysis Program	229
JACOBSEN, Alfred C., and Davis, Stephen A., and Marino, Richard T., B and H Acceptance Sampling Plans	257
JAECH, John L., Understanding Multiple Regression	539
JOHNSON, Melbourne D., Reliability Management of Space Subsystems	292
JONES, Lawrence F., Quality Assurance Program and Lifetime Warranty	277
JONES, Robert R., Systems Engineering and the Control of Quality	524
KIDWELL, John L., and Lavender, H. J., and Squeglia, Nicholas L., Escape Probability as a Systems Design Parameter	486
KING, James R., Data Analysis in Physics of Failure Studies	242
KOZICH, Steve, Professionalism	120
LALLY, F. A., A Program of Product Quality Assurance	286
LAVENDER, H. J., and Kidwell, John L., and Squeglia, Nicholas L., Escape Probability as a Systems Design Parameter	486
LEWIS, Wyatt H., Gaining Business-Wide Support for the Quality System	500
LIND, Elmer E., and Young, Walter R., Con-Men: A 3-D Device for the Representation of Response Surfaces	545
MADISON, Ralph I., and Gottfried, Paul, Warranty Analysis: Industrial and Commercial Product Reliability	300
MANKO, H. H., Reliability in Soldering - Not a Myth	249
MARINO, Richard T., and Davis, Stephen A., and Jacobsen, Alfred C., B and H Acceptance Sampling Plans	257
MARTIN, T. D., and Rollins, T. D., The Assured Performance Calibration (APC) Program	463
MASON, Leon V., Better Quality, Lower Costs, Through Designer-Fabricator Communications	639
MASON, Martin A., The Measurement Gap-Several Years Later	439
MC CLURE, J. V., and Bowers, J. M., The Inspector's Role in Today's Quality Control	21
MC NISH, Alvin G., The International System of Units	431
MILLS, W. W., Jr., Specification - Boon or Bane	586
MORGAN, L. Frank, A Conceptual Model of General Application to the Industrial Quality Control Problem	59
MORRIS, J. W., and Assy, K. C., Professionalism in Quality Control	50
MORROW, Thurlow M., The Role of Metrology in Customer Acceptance Testing Programs	474
NELSON, Lloyd S., Relationships Between the Common Statistical Distributions	371

NICHOLSON, Wesley L., Background Problems in the Analysis of Count Data	552
O'CALLAGHAN, Michael J., Predominant Quality Cost Problems as They Exist in American Industry	614
OKUN, Abe M., International Reliability - A Status Report	348
PIERCE, Richard J., and Beames, Robert E., A Matter of Management - Quality Costs for Missiles and Space Products	99
PURVIS, Russell E., Resource Requirements as a Consequence of R and M Tradeoffs	511
REIS, Paul S., and Fahrenbruch, S. I., Make Your Quality Audit Effective	306
REYNOLDS, L. G., Failure Detection in Parts	270
RODGERS, Frank J., Troubleshooting - A Quality Control Task	282
ROLLINS, T. D., and Martin, T. D., The Assured Performance Calibration (APC) Program	463
RUFF, George F., The Role of System Safety Engineering and Its Relation to Reliability	341
SCHNEIDER, John, Critical, Major, or What?	291
SCHNEIDER, Louis, Analysis of Means - A Tool of Process Control	387
SCHNEIDER, R. C. and Griswold, John W., Exploiting the Reliability-Maintenance Relationship for Manned Missions of Extended Duration	319
SHERMAN, W. A., Certification - Tower of Babel?	689
SQUEGLIA, Nicholas L., and Kidwell, John L., and Lavender, H. J., Escape Probability as a Systems Design Parameter	486
STEPHENS, K. S., and Dodge, H. F., Some New Chain Sampling Inspection Plans	8
TAYLOR, Albert A., Military Inspection of Perishable Foods	18
THAMS, Torben O., and Crossfield, A. Scott., Traceability and Configuration Data System	36
TOCCO, Anthony, Value Engineering and Systems Effectiveness	707
WAECHTER, F. B., Effective Production Sampling	220
WEISS, Howard M., New Developments in Inspection for NASA Space Programs	41
WEPMAN, Roy J., and Canty, E. T., A Unified View of ANOVA	378
WHITEMAN, Irvin R., Quality Control and the Computer	619
WILLIAMS, Harold W., Jr., Product Assurance of Metals for Missiles and Space	160
WILSON, Myron A., and Fagan, Thomas L., Exponential Smoothing for Prediction of Reliability Growth	353
YOUNG, Walter B., and Lind, Elmer E., Con-Man: A 3-D Device for the Representation of Response Surfaces	545
ZABRISKIE, John C., Inspection in the Chrysler 5/50 Warranty	3

